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Fish and Wildlife Service

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Findings and Recommendations on Issuance of an Incidental Take Permit to the Pacific Lumber Company Based on a Habitat Conservation Plan/Sustained Yield Plan and Implementation Agreement for Listed and Unlisted Species (TE 828950-0)

I. DESCRIPTION OF PROPOSAL

Introduction

The Pacific Lumber Company and its wholly owned subsidiaries, Scotia Pacific Company, LLC, and Salmon Creek Corporation (hereafter collectively referred to as "PALCO") have applied to the Fish and Wildlife Service ("FWS") and the National Marine Fisheries Service ("NMFS") (hereafter collectively referred to as "the Services"), for 50-year incidental take permits ("permits" or "ITPs") under section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended ("ESA" or "Act"). The proposed FWS permit would authorize the incidental take of 13 species, including the following five listed species: the northern spotted owl (*Strix occidentalis caurina*), bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrinus anatum*), marbled murrelet (*Brachyramphus marmoratus marmoratus*) and western snowy plover (*Charadrius alexandrinus nivosus*) and eight other species (one bird, two mammals, four amphibians and one reptile) that are not currently listed or proposed for listing should they be listed during the permit term. The NMFS permit would authorize the incidental take of the Southern Oregon Northern California Coast (SONCC) Evoluntionarily Significant Unit (ESU) of coho salmon (*Oncorhynchus kisutch*), one salmonid that is currently proposed for listing (Southern Oregon California Coastal (SOCC) ESU of chinook salmon [*Oncorhynchus tshawytscha*]), two candidate salmonids (steelhead in Northern California ESU [*Oncorhynchus mykiss*] and coastal cutthroat trout in the SOCC ESU [*Oncorhynchus clarki clarki*]), The 17 species proposed to be included in the permits are collectively referred to as "covered species." The Services' joint Biological/Conference Opinion (FWS 1-14-99-18, February 24, 1999) summarizes the status, habitats and distribution of these 17 species and analyzes the effects on each of the species of issuing the incidental take permits. PALCO's application is supported by a Habitat Conservation Plan ("HCP") ("Habitat Conservation Plan for the Properties of the Pacific Lumber Company, Scotia Pacific Company, LLC and Salmon Creek Corporation" dated February 1999) and Implementation Agreement ("IA") ("Implementation Agreement with

regard to Pacific Lumber Company's Habitat Conservation Plan" dated February 1999), which are incorporated herein by reference. The HCP and IA describe the measures PALCO will implement to minimize and mitigate the effects of its timber management activities on the covered species.

In this document the Services present their joint findings and recommendations regarding PALCO's application, including HCP and IA. The Services conclude that issuance of the incidental take permits satisfies all of the issuance criteria contained in Section 10(a)(2)(B). These findings are based on information and analyses contained in the HCP, IA, Final Environmental Impact Statement/Environmental Impact Report for the Headwaters Forest Project ("FEIS/EIR"), Draft Environmental Impact Statement/Environmental Impact Report on the Headwaters Forest Project ("DEIS/EIR") PALCO's Sustained Yield Plan ("SYP") and draft Habitat Conservation Plan, and the Biological/Conference Opinion, each of which are incorporated herein by reference.

A summary of each of the specific conservation plans incorporated into the HCP to minimize and mitigate the impacts of the take likely to result from the covered activities follows. Next, a brief analysis of the effects on the covered species of implementing the individual plans is provided. The conservation plans for the listed species covered under the HCP are discussed first followed by the conservation plans for the unlisted covered species, with the exception of the aquatics conservation plan which addresses both listed and unlisted salmonids. We then document our specific findings regarding each of the issuance criteria contained in Section 10(a)(2)(B) and the bases for those findings.

Project Description

PALCO owns approximately 211,700 acres of forest and associated grasslands in Humboldt County, California which it manages for timber production. Those lands and, potentially, an additional 25,000 acres of adjacent land within a one mile radius of the main contiguous portion of PALCO's ownership, encompass the "plan area." Because PALCO's harvest of trees, particularly old growth trees in marbled murrelet habitat and near streams would likely result in take of listed species, PALCO has applied to obtain ITPs pursuant to Section 10 of the ESA from FWS (for marbled murrelet, northern spotted owl, bald eagle, peregrine falcon, western snowy plover and eight additional unlisted wildlife species) and from NMFS (for the coho salmon and three other unlisted anadromous salmonids).

PALCO seeks authorization to take the covered species incidental to timber management, including timber harvesting and regeneration, site preparation (including burning), vegetation management (excluding use of forest chemicals, i.e., fertilizers, herbicides and pesticides) thinning, fire suppression, water drafting, road and landing construction, reconstruction and upgrading, and road storm-proofing, maintenance, closure, decommissioning, and use. The operation of two commercial rock quarries and the extraction of rock from existing and future borrow pits is proposed to be covered under the permits for a period of five years and two years, respectively. Scientific surveys and studies required under the HCP would also be covered

activities under the permit. All of the covered activities are described in more detail in the HCP and biological/conference opinion. PALCO may seek to amend the permits in the future to cover near-stream gravel mining, grazing, recreational use, fish rearing and application of forest chemicals and to extend the duration of the proposed coverage for the commercial rock quarries and borrow pits.

The HCP's Operating Conservation Program ("OCP") contains the conservation and management measures and prescriptions proposed to minimize, mitigate and monitor the impacts of take of the covered species resulting from the covered activities. The OCP incorporates specific conservation plans for all of the terrestrial and aquatic covered species along with measures to conserve habitat diversity and structural components and specific monitoring requirements. The OCP also includes specific monitoring and compliance provisions including the timber harvest planning ("THP") checklist and requirements for an independent HCP monitor. The various components of the OCP are described in detail in the HCP, IA, and Biological/Conference Opinion. The individual conservation plans are summarized below.

Marbled Murrelet Conservation Plan

The marbled murrelet conservation plan is designed to achieve the following conservation objectives: maintain marbled murrelet nesting activity in the occupied stands within designated Marbled Murrelet Conservation Areas (MMCAs); recruit closed canopy high basal area second growth buffers for residual and old growth stands in the MMCAs; recruit second growth that provides shelter for nest platforms in residual stands in the MMCAs; and minimize new development or activity which could disturb murrelet nesting in the MMCAs. The conservation plan provides for the protection of a large majority of the highest quality marbled murrelet old growth redwood habitat on PALCO's lands for the 50 year term of the permit. Under the plan, a series of reserves consisting of large, contiguous areas of second growth and residual old growth surrounding the major stands of uncut old-growth redwood on PALCO's land would be protected as MMCAs. No timber harvest activities, including salvage logging and other management activities detrimental to the marbled murrelet or to marbled murrelet habitat would be allowed within the MMCAs during the permit term. Specific activities identified in the HCP and IA that the Services and the California Department of Fish and Game ("CDFG") (hereafter collectively referred to as the "wildlife agencies") have determined are compatible with or beneficial to the marbled murrelet and its habitat would be allowed within the MMCAs.

The marbled murrelet conservation plan follows recommendations contained in the final *Recovery Plan for the Marbled Murrelet* (FWS 1997) which states that old growth habitat on private lands in the southern end of Conservation Zone 4 should be protected from harvest in the near term (50 to 100 year period) though habitat conservation plans to allow for the recruitment of old growth habitat on adjacent Federal and state lands and contribute to a well distributed murrelet population in this zone.

In addition to the 7,728 acres of land that would be protected from harvest in the MMCAs, the marbled murrelet conservation plan provides for the protection of the 1,409 acre Grizzley Creek

complex for a period of five years following permit issuance to enable the purchase and permanent protection of the complex. During the five year period no timber harvest, including salvage logging and other management activities would be allowed in the complex. Assuming the complex has not been purchased for permanent protection by the end of the five year period, the complex would be protected as an MMCA for the remaining term of the permit if the FWS or the California Department of Fish and Game determine that protection of the area for the permit term is necessary to avoid jeopardy to the marbled murrelet.

The plan also provides for 300 foot selective harvest buffers within the plan area adjacent to old growth redwood in the Headwaters Reserve and around Humboldt Redwoods and Grizzly Creek Redwoods State Parks, and includes seasonal and phasing requirements on timber harvest activities to minimize impacts to marbled murrelets in occupied stands and higher quality habitat potentially occupied by murrelets located outside of the MMCAs.

The marbled murrelet conservation plan provides for both compliance and effectiveness monitoring to be performed by PALCO and the wildlife agencies. In addition PALCO would establish a $ 1.5 million research fund to be used to study the conservation needs of the murrelet in Conservation Zones 4 and 5 during the first 10 years of the permit term. PALCO would also contribute $30,000 annually for a minimum of five years to existing cooperative research and monitoring efforts.

Northern Spotted Owl Conservation Plan

The northern spotted owl (NSO) conservation plan is designed to insure the continuance of a viable northern spotted owl population on PALCO's lands for the life of the permit. The plan employs a habitat based strategy to provide for the retention and recruitment of requisite habitat types and imposes harvest restrictions near owl activity sites. The plan also benefits from riparian management zone (RMZ) and related prescriptions contained in the HCP's aquatics conservation plan. The NSO conservation plan requires that a minimum of 108 owl activity centers within the Plan Area be retained annually over the permit term. At least 80 percent of the centers must be occupied by northern spotted owl pairs. The plan also requires that an average reproductive rate of at least 0.61 fledged young per owl pair be maintained within the plan area over the permit term. Should the number of occupied activity centers fall below 108 or the number of sites occupied by pairs falls below 80 percent, take avoidance measures must be implemented until the FWS and CDFG, with the assistance of a Scientific Advisory Panel, develop specific measures to remedy the situation. The plan calls for annual owl censuses to monitor all owl activity centers and determine the number of pairs, nesting pairs and reproductive rates. The plan also imposes restrictions on harvesting near active owl sites, including seasonal restrictions, disturbance buffers and minimum habitat retention requirements.

The sivicultural prescriptions associated with the aquatics conservation plan, including the RMZ, mass wasting avoidance strategy, and cumulative effects and disturbance index restrictions, the protection of habitat in MMCAs, and the retention standard of 10 percent late seral habitat for each Watershed Assessment Area (WAA) required under the Habitat Diversity and Structural

Components element of the OCP will promote the retention and recruitment of foraging, roosting and nesting habitat in watersheds across the ownership and through the HCP permit period. The *Draft Final Northern Spotted Owl Recovery Plan* (FWS 1991) establishes a recovery goal for the Southern Humboldt-Northern Mendocino County region of three clusters of 20 owl pairs. The NSO plan's requirement that 108 owl activity centers and 80 active nest sites be maintained, respectively, on PALCO's ownership substantially exceeds the draft recovery plan's goal for the entire region.

Aquatics Conservation Plan

The goal of the aquatics conservation plan is to maintain or achieve, over time, a properly functioning aquatic habitat condition, which is essential for the long term survival of anadromous salmonids. The reduction in land management impacts and habitat improvement that will be realized through implementation of the aquatics conservation plan will also benefit many of the other covered species. This plan includes six main interrelated components: riparian management, road management, hillslope management, cumulative effects, monitoring, and watershed analysis. The riparian management strategy establishes riparian management zones around Class I (fish-bearing), Class II (aquatic life but non-fish bearing) and Class III (seasonal) waters. The Class I and Class II RMZs would include an inner no-cut area and an outer band available for selection harvest only. Equipment would be restricted to existing roads in these zones. Class III RMZs would also have an inner no-cut area, but the outer band would not be subject to harvest restrictions. Equipment would also be restricted to roads and down wood would be required to be left on site to filter sediment. On 2,175 acres of the Class III RMZs, the inner no-cut area would be split to include both a no-cut area and an area for selective harvest. The road strategy establishes provisions for wet weather road use, standards for road construction, reconstruction and upgrading, a progressive road storm-proofing program, a road inspection schedule and a maintenance program. The hillslope management component includes harvest restrictions and limits new road construction on unstable areas, areas prone to landslides and on steep slopes. A disturbance index addresses cumulative effects from timber operations on the Plan Area with operation limitations if the index is exceeded.

PALCO must complete watershed analysis to develop site-specific prescriptions within the first five years following issuance of the permits. The aquatics conservation plan also establishes compliance, effectiveness and trend monitoring to assess the success of PALCO's implementation of the plan and to determine if the provisions in the aquatics plan are effective and the aquatic habitat is responding as expected.

Bald Eagle Conservation Plan

The bald eagle conservation plan is designed to protect any bald eagle nest sites that may be discovered within the plan area and to minimize disturbance to foraging bald eagles. Currently there are no known bald eagle nest sites within the plan area. The plan requires focused surveys for bald eagle nests in all THPs within 0.5 miles of all Class I waters that provide potential foraging habitat. All THPs must also be evaluated for the presence of suitable bald eagle nesting

habitats and additional localized searches for nests and eagles must be conducted where indicated. The plan includes take avoidance and minimization measures including a prohibition on cutting trees within 500 feet of an active bald eagle nest without FWS and CDFG concurrence, a prohibition of timber harvest, including helicopter yarding, within 0.5 miles of an occupied nest during the nesting season and a prohibition on blasting, pile driving, and similar activities capable of introducing loud noises within 1 mile of an occupied nest during the same period. Nest sites for which buffers are established must be monitored during the nesting season each year an individual THP is in effect and for at least one breeding season following completion of the THP. PALCO, FWS and CDFG will meet at five year intervals to evaluate plan implementation and the effectiveness of the plan conservation measures and to evaluate plan changes.

Many of the conservation measures included in the aquatics conservation plan, including restrictions on disturbance in channel migration zones and Class I RMZs and restrictions on winter use, construction, reconstruction, and stormproofing of roads are expected to minimize the potential for disturbance to foraging bald eagles, and to provide an improving prey base.

American Peregrine Falcon Conservation Plan

The peregrine falcon conservation plan is designed to identify and protect any peregrine falcon nests within the Plan Area. Currently one peregrine falcon nest is believed to occur within the plan area. The plan requires surveys of all potential peregrine falcon nesting habitat within THP areas, within 0.5 miles of THP boundaries if operations will occur during the falcon's breeding season, and within 1 mile of a THP if blasting or pile driving activities will occur. No trees may be cut within 500 feet of an active peregrine falcon nest without the prior concurrence of FWS and CDFG, and no timber operations may occur within 0.5 miles of an occupied nest site during the nesting season or within 1 mile of an occupied nest site if blasting, pile driving, helicopter yarding or similar activities capable of introducing loud noises will occur. All nest sites for which buffers are established must be monitored during the nesting season for each year the THP is in effect and for one year following completion of the plan and reports provided to FWS and CDFG. PALCO, FWS and CDFG will meet at five year intervals to evaluate plan implementation and the effectiveness of the plan conservation measures and to evaluate plan changes.

Western Snowy Plover

The snowy plover conservation plan is designed to identify and protect any snowy plover nests that may be discovered within the Plan Area. Currently no snowy plover nest sites are known to occur within the plan area. Under the plan PALCO must conduct reconnaissance-level surveys on gravel bars above Rio Dell bridge, and if plovers are found, conduct full protocol surveys on all gravel bars within one mile of the sighting. If a nest is discovered, a 1,000 foot buffer will be established until the end of the nesting season. PALCO must also conduct surveys along the Eel River downstream of the Rio Dell bridge according to FWS approved survey protocols if the company acquires rights to extract gravel from gravel bars downstream of the Rio Dell bridge.

PALCO must also evaluate the indirect downstream effects of proposed gravel extraction levels and meet with the agencies to evaluate practicable mitigation measures.

Bank Swallow Conservation Plan

The bank swallow conservation plan is intended to avoid impacts to bank swallow nesting colonies on streambanks and hillsides and prevent the establishment of nest colonies in stock-piled sand associated with in-stream mining operations. Currently, there are no bank swallow nest colonies known to occur within the plan area. Aquatic conservation measures, including the channel migration zone and RMZ measures should effectively minimize disturbance to nesting colonies. PALCO is also required to survey the proposed alignment of any road construction crossing low gradient Class I waters to identify any nest colonies within 200 feet of a construction area. If nest colonies are found PALCO must consult with FWS and CDFG and implement measures to maintain the nest colony. All activities which could indirectly impact or disturb nest colonies must be separated by a 200 foot buffer during May and June. PALCO must monitor nest sites to determine the approximate dates of establishment and abandonment of each site and report such information to FWS and CDFG annually. PALCO, FWS and CDFG will meet at five year intervals to evaluate plan implementation and the effectiveness of the plan's conservation measures and to evaluate plan changes.

Pacific Fisher Conservation Plan

The conservation goal of the Pacific fisher conservation plan is to maintain a sufficient amount of suitable habitat to contribute to a sustainable population of Pacific fishers in the Coastal Province of Northern California. The sivicultural requirements of the aquatics conservation plan associated with RMZs, the mass wasting avoidance strategy, and cumulative effects and disturbance index restrictions, the protection of habitat within MMCAs and the retention standard of 10 percent late seral habitat for each WAA required under the Habitat Diversity and Structural Components element of the OCP are expected to provide sufficient denning and resting habitat, in terms of quantity, quality and distribution to contribute to a viable population. Retention and recruitment of habitat structural components within and outside of RMZs across the ownership are expected to provide older forest legacies in younger stands when such stands reach a mid-successional seral stage. These legacy components are expected to provide suitable substrate for Pacific fisher denning and resting sites. PALCO is required to monitor and report seral stage distribution to FWS and CDFG and, within one year of permit issuance, develop jointly with FWS and CDFG, a forest carnivore survey methodology to determine the extent of Pacific fisher use of habitat types and seral stage present on PALCO lands. The research and monitoring project must commence by the second year following permit issuance and be evaluated by the agencies and PALCO within five years thereafter.

California Red Tree Vole Conservation Plan

The conservation goal of the red tree vole conservation plan is to maintain a sufficient amount of suitable habitat to contribute to a sustainable population of red tree voles within each watershed

assessment area in the plan area through the permit term. The sivicultural requirements of the aquatics conservation plan associated with RMZs, the mass wasting avoidance strategy, and cumulative effects and disturbance index restrictions, the protection of habitat within MMCAs and the retention standard of 10 percent late seral habitat for each WAA required under the Habitat Diversity and Structural Components element of the OCP are expected to provide sufficient nesting habitat, in terms of quantity, quality and distribution to contribute to viable populations within each WAA. Retention and recruitment of habitat structural components within and outside of RMZs across the ownership are expected to provide older forest legacies in younger stands when such stands reach a mid-successional seral stage. These legacy components are also expected to provide suitable substrate for red tree vole nesting sites. PALCO is required to monitor and report seral stage distribution to FWS and CDFG as provided in the Habitat Diversity and Structural Components element of the OCP. Within one year of permit issuance, PALCO must develop jointly with FWS and CDFG, a research and monitoring study to examine red tree vole habitat seral stage use and habitat connectivity within the plan area. After 5 years the results of the study will be jointly reviewed to evaluate the effectiveness of the plan's conservation measures. If consensus cannot be reached among FWS, CDFG and PALCO regarding any necessary changes to the red tree vole conservation plan, the agencies may terminate coverage for the red tree vole under the FWS and CDFG permits.

Amphibian and Reptile Conservation Plan

The conservation goal of the amphibian and reptile conservation plan is to sustain for the duration of the permits viable populations of the northern red-legged frog, foothill yellow-legged frog, tailed frog, southern torrent salamander, and the northwestern pond turtle within each watershed assessment area in which they occur within the plan area. Conservation measures outlined in the aquatics conservation plan are expected to provide for sustainable populations of these species where suitable habitat types occur across the plan area. In addition, as part of the watershed analysis process, an amphibian and reptile module must be developed which includes key questions regarding the species' life history requirements, including those upslope of RMZ boundaries. Results from this module shall be integrated into synthesis and prescription development to minimize and mitigate management effects on all phases of the species' life histories. Compliance and effectiveness monitoring will be carried out as required by the aquatics conservation plan.

Measures to Conserve Habitat Diversity and Structural Components for Covered Species

The conservation goals of this component of the HCP's Operating Conservation Program are twofold: to promote habitat diversity by ensuring that a mix of vegetation types and seral stages are maintained across the landscape; and to maintain and recruit sufficient amounts and distribution of forest structural components to contribute to the maintenance of the covered wildlife species. PALCO is required to report the seral stage distribution for each hydrologic unit to assess conformity with projected forest seral types as described in the SYP and demonstrate that forested lands within each WAA include at least 10 percent late seral, 5 percent mid-successional, 5 percent young and 5 percent forest opening seral types. To retain sufficient

forest structural components, all snags that do not constitute a safety hazard are to be retained during timber harvest and a minimum average number of snags of specified diameter and height prescriptions are to be retained following timber harvest. If sufficient snags of the appropriate sizes are not available following timber harvest, green trees of the same size are to be retained. Also following timber harvest, at least four live cull trees per acre outside of Class I and II RMZs, up to two hardwood trees per acre that are larger than 30 inches diameter breast height (dbh) and two logs per acre that are larger than 15 inches dbh and more than 20 feet long must be retained.

During the preparation of THPs, PALCO must gather information on the presence of snags, down logs, hardwoods, and live culls for inclusion in the habitat component monitoring process. Monitoring must also be carried out during reforestation inspections, timber stand improvement monitoring, and timber cruises. In addition, PALCO is responsible for developing a random sampling methodology in consultation with FWS and CDFG to monitor throughout the permit term at 5 to 10 year intervals the effectiveness of the conservation measures in achieving the conservation goals of the habitat diversity and structural components element of the OCP.

Analysis of Effects

Marbled murrelet

The effects of issuing the FWS ITP on the marbled murrelet are described in detail in the Biological/Conference Opinion and in the FEIS/EIR. In the Biological/Conference Opinion, the FWS determined that implementation of the proposed action is not likely to jeopardize the continued existence of the species, or to destroy or adversely modify designated critical habitat. A summary of the effects and the conclusions reached by FWS are included below.

Effects to the marbled murrelet may result from removal or modification of breeding habitat by timber harvest or associated activities such as road building, or by disturbance of murrelets inhabiting timber stands adjacent to areas where such management activities are underway. Take could occur through harm, harassment, or direct killing or injuring of individuals.

In analyzing the effects of the HCP on the marbled murrelet, it is important to consider the context created by the associated acquisition of the Headwaters Reserve. This area, the most important murrelet habitat remaining on private lands in California, contains about 3,117 acres of uncut old growth redwood occupied by marbled murrelets. Additional habitat occurs in neighboring Humboldt Redwoods State Park, where almost 7,000 acres of uncut old-growth are known to be occupied by murrelets. In the Southern Humboldt region, uncut old growth redwood provides the best quality breeding habitat for the species.

The HCP's objectives for marbled murrelets are to preserve most of the best quality habitat, provide for improvement of that habitat over time, and direct timber harvest to lower quality habitat. The primary protection measure is the establishment of Marbled Murrelet Conservation Areas (MMCAs) for the life of the permit. These areas contain about 1,576 acres of uncut old

growth redwood, which is about 68 percent of the uncut old growth that would remain on the property after the acquisition of Headwaters, and include the four largest stands outside the Headwaters, ranging in size from about 255 to about 393 acres. The MMCAs also contain about 216 acres of old growth douglas-fir and about 2,733 acres of residual redwood (stands from which the majority of old-growth trees have been harvested, leaving scattered old trees). Residual redwood provides lower quality breeding habitat than uncut old growth, but presents the best opportunity for short-term habitat improvement.

The MMCAs will provide an important beneficial effect in the long term by aggregating and protecting the best remaining blocks of uncut old growth, residual, and second-growth on the property into a reserve system with capacity for substantial improvement over the life of the permit. This improvement will be realized through the growth of young forests within and around the old-growth and residual, providing increasing cover for nest sites and protection from weather and predators.

The primary adverse effect of the HCP on the marbled murrelet would be loss of breeding habitat associated with harvest of the remaining uncut and residual old growth redwood. About 6,909 acres of potential murrelet habitat (446 acres of uncut old growth redwood and 6,463 acres of residual redwood) would not be retained in MMCAs. The 446 acres of uncut old growth that would not be protected in the MMCAs are in scattered smaller groves, none of which exceed 90 acres in size. Of the 6,463 acres of residual, about 4,000 acres are estimated to be occupied by murrelets, based on observed occupancy rates. Many of the residual stands outside MMCAs have low timber volume and canopy closure, and are thus believed to contain the lowest habitat quality among the residuals on the property. Although these stands would not be protected in MMCAs, a total of about 4,775 acres of these stands would occur within riparian management zones, where much of the timber would be subject to no-cut or partial cut prescriptions, and thus would retain some portion of its value for murrelets.

The murrelet habitat outside the MMCAs and acquisitions would constitute about 3.6 percent of the likely occupied habitat within Conservation Zone 4, and about 0.67 percent of the habitat in the 3-state listed range. Effects on acreage of designated critical habitat would occur at similar scales. This is regarded as a worst case impact, because much of the habitat outside the MMCAs is of lower quality than that in the areas being compared, and a substantial portion of the acreage outside MMCAs will be protected under the aquatic measures of the HCP.

In those stands of murrelet habitat authorized for harvest, direct take will be minimized through measures that restrict harvest of all occupied habitat to the period outside the breeding season. Unsurveyed habitat authorized for harvest will be rated, and the half of that acreage with better nesting conditions will be similarly restricted. Activities within MMCAs and within 0.25 miles of other occupied habitat will be reviewed to ensure that disturbance is reduced to the maximum extent feasible. These measures will greatly reduce, but not eliminate, disturbance effects. Also, to the extent feasible, better quality habitat will be harvested later than poorer quality habitat. However, given the relatively low volume of old-growth available for harvest, this phasing of harvest will probably not postpone effects of this habitat loss for longer than a few years.

While this strategy would result in adverse effects on marbled murrelets, sufficient habitat would be protected in the MMCAs and recruited over the life of the permit to provide for the continued contribution of marbled murrelet populations within the plan area to the long term survival of the species in the Southern Humboldt County region, in Conservation Zone 4, and across the species' listed range.

Northern spotted owl

The effects of issuing the proposed FWS ITP on the northern spotted owl are described in detail in the Biological/Conference Opinion and in the FEIS/EIR. In the Biological/Conference Opinion, FWS determined that implementation of the proposed action is not likely to jeopardize the continued existence of the species, or to destroy or adversely modify designated critical habitat. A summary of the effects and the conclusions reached by FWS are included below.

Effects to the northern spotted owl may occur through removal or modification of breeding habitat by timber harvest or associated activities such as road building, or by disturbance of individuals inhabiting timber stands adjacent to areas where such management activities are underway. Take could occur through harm, harassment, or direct killing or injuring of individuals.

Effects of the HCP on northern spotted owls must be viewed in the context of the species' ecology in coastal northwestern California, which is somewhat different than in many portions of the species' range, and in the context of the Northwest Forest Plan (NWFP), which is intended to maintain viable populations of the species on Federal lands. In the three northwestern coastal California counties, over 600 owl sites are known on private timberlands that have been subject to management activities for decades. Densities of owl activity centers are unusually high. This apparently results because of the rapid regrowth of forests following harvest in this region, and because of high densities of a favored prey species, the dusky-footed woodrat, that occur in brushy regenerating clearcuts in harvested areas. Also, habitat conditions in NWFP reserves in northwestern California are generally better than in many other portions of the species range.

Under the HCP, owl populations within the plan area are expected to fluctuate during the permit period in response to habitat conditions created by timber management. Old-growth and developing older forest in MMCAS and in riparian management zones, along with minimum retention requirements for late seral forests in each WAA, will provide nesting habitat, and the younger stages should continue to produce prey. The HCP would establish a "floor" level of 108 activity centers, an average of 80 percent of which must be occupied by pairs. This would constitute a reduction in the current population of approximately 30 percent. If the population declined to this level, no further take would be allowed. The population at this "floor" level would have a density approximately equal to a nearby US Forest Service Late Successional Reserve and demography study area where the population appears to be stable, and this population level would substantially exceed the population target established for the entire Southern Humboldt - Northern Mendocino area by the northern spotted owl Recovery Team.

The reproductive rate (young per pair) objective would be the same as has occurred over the last eight years, during which period PALCO has been operating under NSO take avoidance guidelines. To protect reproducing owls, all active nests would be protected from disturbance during the breeding season. However, at population levels above the population "floor", sites could be harvested outside the breeding season; owls from these sites would be displaced into poorer habitat. Because the re-institution of take avoidance would have substantial negative impacts on the company's timber management, it would be expected that PALCO would focus harvest activities on sites that are less productive. While the strategy would have adverse effects on northern spotted owls, the degree of impact on regional and range-wide populations would be slight, and the population level maintained would be expected to provide for the long term survival of the species on the property and in the surrounding region. Further, although there will be a decline in owl nesting habitat in the first few decades of the plan, the trend will be reversed in later decades and there will be more nesting habitat on the property at the end of the permit period that exists today.

Coho Salmon, Chinook Salmon, Steelhead, and Coastal Cutthroat Trout

The effects of issuing the proposed NMFS ITP on four species of anadromous salmonids are described in detail in the Biological/Conference Opinion and in the FEIS/EIR. In the Biological/Conference Opinion on the proposed action, NMFS determined that implementation of the proposed action is not likely to jeopardize the continued existence of the listed coho salmon in the SONCC ESU, the proposed chinook salmon in the SOCC ESU, steelhead in the northern California ESU, and the coastal cutthroat trout in the SOCC ESU. The proposed action is also not likely to destroy or adversely modify proposed critical habitat for the SONCC ESU coho salmon or the SOCC ESU chinook salmon. A summary of the effects and the conclusions reached by NMFS are included below.

An analysis of the direct, indirect and cumulative effects to the four Pacific salmonids resulting from authorizing incidental take from timber harvest, associated road management, burning, water drafting, operation of two commercial rock quarries, and the development and operation of borrow pits is included in the Biological/Conference Opinion. Effects on the four Pacific salmonids may occur through alteration of the quality and quantity of essential habitat features, in the form of water quality degradation, and degradation and destruction of physical habitat elements from the proposed covered activities. Take may occur in the form of harassment, harm, injury, and killing.

The direct and indirect effects to the four Pacific salmonids are expected to be minimized and mitigated through the implementation of the OCP, primarily the aquatics conservation plan. The aquatics conservation plan's minimization and mitigation measures consist of the interrelated riparian management strategy, hillslope management, road management, a disturbance index (DI), and watershed analysis. The combined implementation of all of these strategies is expected to result in the maintenance or achievement, over time, of properly functioning aquatic habitat conditions.

Timber harvest on streambanks and in the adjacent upland areas may result in adverse changes to channel dynamics by altering or eliminating habitat complexity and off channel habitat. Increases in water temperature to the point of being harmful to salmonids can result from a reduction in the tree canopy. Sediment input may be increased due to destabilization of streambanks and degradation of the adjacent upland to filter sediment. The recruitment of large woody debris may be further impaired by the harvesting of the large trees in the adjacent upland areas. To minimize these effects the riparian management strategy establishes Riparian Management Zones (RMZ) on Class I, Class II, and Class III waters. The RMZs provide protection to the channel migration zone which will aide in the maintenance of channel dynamics and off-channel habitat. The RMZs will also, over time, provide conditions that result in vegetated buffers with anticipated conifer tree canopy closures of 80 to 90 percent, thus regulating water temperatures within the acceptable range for the four Pacific salmonids. The RMZs are expected to minimize delivery of sediment to waters from overland flow through the filtration capacity of the buffer. Buffer widths combined with the conifer tree retention standards including no harvest zones, increases in vegetative cover, down wood requirements, exclusion of equipment off existing roads, and soil stabilization provisions are expected to result in a moderate to high level of sediment filtration capability, thereby reducing the amount of sediment that reaches the water. On slopes 50 percent or greater, the RMZ is extended upslope to the break in slope for better filtration of surface erosion and to minimize the probability of landslide origination close to the water. The recruitment of large wood is expected to increase, over time, with the establishment of the RMZs and the tree retention prescriptions included therein. Inner no harvest zones and specified tree sizes and distribution requirements in the outer zones of the RMZs are expected to increase the potential for large wood recruitment. NMFS also expects large woody debris to be contributed to the waters from debris torrents, landslides, and windthrow. Even with the mitigation measures, the amount and size of large woody debris required for functioning aquatic habitat will not be fully realized within the life of the permit due to the current lack of large woody debris, the absence of standing trees of adequate size, and the time periods associated with growing large trees that may be recruited to the water.

Mass wasting events, natural and triggered by land management, have caused significant influxes of sediment to the Class I, II, and III waters resulting in the degradation and destruction of habitat for all life stages of the four Pacific salmonids. The hillslope management strategy minimizes the effects of the proposed covered activities by prohibiting timber harvest on areas that are prone to landsliding until an analysis has been conducted (through the watershed analysis process) which is expected to determine appropriate management based on site specifics. Road construction will be limited on these areas until a geologic assessment and analysis of risk to the aquatic environment determines that roads are appropriate in specific areas. The restrictions on these mass wasting areas of concern are anticipated to result in a reduction in the probability that a mass wasting event will be triggered by a covered activity, thus reducing the probability that large amounts of sediment will be delivered to the aquatic environment. If a mass wasting event occurs, the timber harvest restrictions resulting in the retention of all trees, will minimize the effects of an influx of sediment by also delivering wood to the water.

The road management strategy includes provisions for road storm-proofing, construction, reconstruction, upgrading, inspections, maintenance, and wet weather use. The provisions associated with each activity will minimize sediment input from road related surface erosion and road related mass wasting, the blocking or hindering of salmonid migration, the inhibiting of recruitment of large woody debris, the alteration of channel morphology, and the risk of chemical contamination. The minimization measures include an aggressive road stormproofing program which results in repair of all sites characterized as being a high or medium risk to deliver sediment to the water. These sites will receive corrective work that substantially reduces the probability that a specific site will fail and deliver sediment to the water. Road construction, reconstruction and upgrading are required to follow standards that limit activities during the wet weather period, which will reduce the risk of sediment delivery to water. Reconstruction and new construction is prohibited in the RMZs to reduce the potential for roads to alter channel morphology, to reduce the potential for roads to intercept large wood before the wood reaches the water, and to reduce surface erosion which delivers sediment to the water. Reconstruction and new construction are also limited on mass wasting areas of concern which reduces the potential for a road to further destabilize landslide prone areas, thereby reducing the potential of road related mass wasting events which may deliver sediment to the water. Salmonid migration will benefit from large culverts that are to be designed to allow for passage of all salmonid life stages. The culverts will be installed under roads during new construction, reconstruction , upgrading and storm-proofing. The road inspection and maintenance program will also minimize sediment delivery to waters by increasing the potential that a problem area will be identified and repaired before it fails. Road use by heavy equipment is prohibited when the roads are wet. This limitation on use will minimize surface erosion and water diversion on the road surface. Light vehicles may use the roads when wet, but repairs to any damage must be conducted within 24 hours of the use in order to minimize the possibility of sediment delivery to waters. Overall, the road management strategy is expected to result in a decrease in road-related surface erosion and road-related mass wasting, thereby reducing the amount of sediment delivered to the waters from the road network.

The aquatics conservation plan disturbance index is expected to minimize the cumulative effects of watershed disturbance by limiting the most deleterious forms of timber management, such as clearcutting, tractor yarding, and the construction of new roads, in watersheds were the DI threshold has been exceeded due to past management. Continued inputs of sediment, the effects to water temperature and large wood recruitment, and further destabilization of landslide prone areas are not expected to be significantly exacerbated in cumulatively impaired watersheds with implementation of the DI.

Burning is a proposed covered activity to be used as a tool for site preparation as part of timber harvest. The effects in the form of sediment delivery to waters and loss of large woody recruitment are expected from burning. Effects will be minimized by the existence of the RMZs and the tree retention prescriptions included therein, which should cause a microclimate differential reducing the possibility of fire entering the RMZs or consuming large trees. Bare mineral soil that may be an after effect of burning and deliver sediment to a water will be treated to avoid surface erosion.

Water drafting is used for dust abatement on roads and fire suppression during site preparation. Water drafting from fish bearing streams can decrease the space available for salmonids and increase their vulnerability to predators. Juvenile salmonids can also be drawn into the water holding facilities. The l HCP incorporates the NMFS water drafting screening criteria. NMFS expects that the implementation of the screening criteria will substantially reduce the direct impacts of water withdrawal on salmonids.

Two commercial rock quarries may affect water quality through the delivery of sediment and contaminants to the waters. The HCP requires that the rock quarries continue to implement erosion control and use of detention ponds to reduce runoff. In addition, further erosion control would be implemented to avoid the delivery of sediment that may result in a visible increase in any of the waters. NMFS expects that any impacts that result after implementation of mitigation will be minimal.

Borrow pits are used through PALCO's ownership to provide material for road work. The borrow pits can result in effects to the aquatic environment similar to those of roads. These effects will be minimized through implementation of the road provisions of the aquatics conservation plan. All new and active borrow pits must comply with the same minimization measures as the roads, thereby reducing the amount of sediment delivered to waters.

Adaptive management, including but not limited to watershed analysis, may change the existing provisions of the aquatic conservation plan. NMFS expects that any changes will result in equal or greater protection for the four Pacific salmonids and their habitat than currently proposed in order to achieve, over time, or maintain a properly functioning aquatic habitat condition. Changes in prescriptions are expected to be based on new or site specific information.

Southern torrent salamander, Red-legged frog, Yellow-legged frog, Tailed frog, and Northwestern pond turtle

The effects of issuing the proposed FWS ITP on the covered amphibians and reptile are analyzed in detail in the biological/conference opinion and in the FEIS/EIR. In addition to providing for anadromous fish species, the aquatic conservation plan discussed above will address the habitat needs for these amphibian and reptile species found within the plan area and covered by the HCP. In combination, the aquatic conservation plan elements will have beneficial effects on these species by increasing the amount of down wood in streams, reducing water temperature and sediment input, and reducing direct effects of equipment use in riparian zones. A special module will be designed to evaluate the needs of these species in the watershed analysis process, and the subsequent setting of riparian prescriptions will include consideration of their habitat needs. Effects that might still occur under the HCP include continued impacts of past management that will gradually be remediated by the conservation plan, and a low degree of direct effects at localized levels to individuals dispersing outside of no cut riparian management zones during management activities. However, overall the HCP should result in much improved conditions for these species. In the biological/conference opinion on the proposed action, the

FWS determined that implementation of the proposed action is not likely to jeopardize the continued existence of any of these species.

Bald eagle and American peregrine falcon

The effects of issuing the proposed ITPs on the bald eagle and peregrine falcon are analyzed in detail in the biological/conference opinion and in the FEIS/EIR. Both the bald eagle and American peregrine falcon inhabit the property in small numbers. Both could potentially be affected by timber management or associated activities near specific use sites. One peregrine falcon nest site is known, but there is little or no other habitat where breeding by peregrines might be expected. No bald eagles are known to nest on the property, but small numbers of wintering eagles occur, apparently foraging on salmon runs. If breeding bald eagle populations continue to expand in the coastal area, it is possible that eagles will nest on the property in the future. The respective conservation plans for these species provide for surveys for bald eagles in all timber harvest plans that contain potential nesting habitat, and would protect all nest sites of both the bald eagle and peregrine falcon from disturbance. In addition, aquatic conservation plan measures should improve forage conditions for bald eagles over the long term. The effects of the proposed action on both of these species are expected to be low. In the biological/conference opinion on the proposed action, FWS determined that implementation of the proposed action is not likely to jeopardize the continued existence of either of these species. The plan area does not include any designated critical habitat for the peregrine falcon and critical habitat has not been designated for the bald eagle.

Western snowy plover and bank swallow

These two birds (the first of which is listed as threatened under the ESA and the second as threatened under the California Endangered Species Act ("CESA"), are not known to occur within the plan area at this time. Both depend on specific nesting habitat types (respectively, large, open riverine gravel bars, and cutbanks in soft soils along open areas near stream courses) that may be present in limited areas of the ownership. Both could potentially be affected by timber management or associated activities near specific use sites. Surveys will be conducted in favorable habitats in advance of management activities that have potential to disturb nesting sites, and any sites discovered will be protected. An important degree of negative effects from management activities will be unlikely. In the biological/conference opinion on the proposed action, FWS determined that implementation of the proposed action is not likely to jeopardize the continued existence of either of these species. The plan area does not encompass any critical habitat designated for the western snowy plover.

Pacific fisher

The effects of issuing the proposed FWS ITP on the Pacific fisher are analyzed in detail in the biological/conference opinion and FEIS/EIR. This forest carnivore, which is not currently listed, has been located on an occasional basis on the property, and is more common in inland areas dominated by Douglas-fir and hardwoods. Effects to the Pacific fisher may occur through

removal or modification of breeding or dispersal habitat by timber harvest or associated activities such as road building, or by disturbance of individuals inhabiting timber stands adjacent to areas where such management activities are underway. Take could occur through harm, harassment, or direct killing or injuring of individuals. The needs of the fisher will be provided by the MMCAs, the property-wide distribution of late seral forests, the riparian management zones, and special measures such as retention of snags, logs, and large hardwood trees during timber harvest. While timber harvest may have negative effects on individuals on an occasional basis, it is expected that the habitat needs of the species will be provided by these measures. In addition, a study will be undertaken to determine the extent of fisher use of habitat types and seral stages on the property. In the Biological/Conference Opinion on the proposed action, FWS determined that implementation of the proposed action is not likely to jeopardize the continued existence of this species.

California red tree vole

The effects of issuing the proposed FWS ITP on the California red tree vole are analyzed in detail in the biological/conference opinion and FEIS/EIR. This species, which is not currently listed, depends on Douglas fir trees for foraging and nesting. It is known to occur in most seral stages on the property, but is apparently more abundant in old growth. Effects to the red tree vole may occur through removal or modification of breeding or dispersal habitat by timber harvest or associated activities such as road building, or by disturbance of individuals inhabiting timber stands adjacent to areas where such management activities are underway. Take could occur through harm, harassment, or direct killing or injuring of individuals. Several thousand acres of old-growth Douglas fir will be harvested under the HCP, but it is expected that the vole's needs will be provided by the MMCAs, property-wide distribution of late seral forests, and the riparian management zones. However, because little is known of the degree of this species' use of the property, a study will be conducted regarding its use of younger forests. After five years, based on the study results, the agencies and PALCO will review the adequacy of management measures. Because of the degree of uncertainty regarding the needs of the species, the agencies have retained the option to terminate permit coverage for this species following the study. In the biological/conference opinion on the proposed action, FWS determined that implementation of the proposed action is not likely to jeopardize the continued existence of this species.

II. INCIDENTAL TAKE PERMIT CRITERIA - ANALYSIS AND FINDINGS

Findings

Section 10(a)(2)(A) of the Act provides that "no permit may be issued by the Secretary authorizing any taking referred to in paragraph (1)(B) unless the applicant submits to the Secretary a conservation plan that specifies:

(i) the impact which will likely result from such taking;

(ii) what steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps;

(iii) what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized; and

(iv) such other measures as the Secretary may require as being necessary or appropriate for the purposes of the plan."

Section 10(a)(2)(B) of the Act provides that the Secretary shall issue a permit if he finds "...after opportunity for public comment, with respect to a permit application and the related conservation plan that

(i) the taking will be incidental;

(ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;

(iii) the applicant will assure that adequate funding for the plan will be provided;

(iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and

(v) the measures, if any, required under subparagraph (A)(iv) will be met; and he has received such other assurances as he may require that the plan will be implemented."

The Service makes the following findings under Section 10(a)(2)(B) regarding issuance of the proposed incidental take permits.

A. The taking will be incidental.

Takings of the covered species under the HCP and IA would result from, but would not be the purpose of, otherwise lawful activities conducted or carried out by PALCO, and agents and other third parties under PALCO's control as specified in Section 3.2 of the IA. Those activities are timber management activities in the plan area, including timber harvesting and regeneration, site preparation (including burning), vegetation management (excluding use of forest chemicals, i.e., fertilizers, herbicides and pesticides) thinning, fire suppression, water drafting, road and landing construction, reconstruction and upgrading, and road storm-proofing, maintenance, closure, decommissioning, and use, the operation of two commercial rock quarries and the extraction of rock from existing and future borrow pits and scientific surveys and studies required under the HCP. All activities covered under the permit must be carried out in accordance with Federal, state and local laws.

B. PALCO will, to the maximum extent practicable, minimize and mitigate the impacts of taking of the covered species.

The impacts of incidental take expected to occur from the timber management and associated activities covered under the HCP and IA are summarized above and analyzed in detail in the Services' Biological/Conference Opinion and in the FEIS/EIR. As indicated in the Opinion, the impacts will vary widely among the covered species depending on their habitat requirements, presence within the plan area, and conservation status. The HCP conservation measures are tailored to the specific circumstances of each of the covered species and are designed to effectively minimize, and to the extent take is likely to occur, mitigate the impacts of timber management activities on the species.

Marbled Murrelet

The overall conservation objectives of the marbled murrelet conservation plan are to protect most of the high quality old growth redwood habitat within the plan area, provide for improvement of that habitat over the permit term and direct timber management activities to lower quality murrelet habitat within the plan area. As discussed above in the Analysis of Effects Section, the MMCAs will protect almost 70 percent of the uncut old growth habitat within the plan area and include the four largest stands of old growth on the ownership remaining after the Headwaters acquisition. In addition, the MMCAs include 4,147 acres of residual redwood which presents the best opportunity for short-term habitat improvement. Of the approximately 446 acres of old growth available for harvest outside of the MMCAs most are scattered in smaller groves, none of which exceed 90 acres in size. In addition, of the approximately 4,000 acres of presumed occupied residual redwood available for harvest outside of the MMCAs, many stands contain low timber volume and canopy closure and are believed to be of the lowest habitat quality for murrelets. An estimated 4,775 acres of the uncut and residual redwood outside of the MMCAs is expected to occur within RMZs, and thus is either completely or partially protected from harvest under the aquatics conservation plan. Seasonal restrictions on harvest during the murrelet nesting season and phasing requirements to delay, during the first

few years of the permit, harvest of the better quality murrelet habitat outside the MMCAs will minimize the impacts of take of murrelets authorized under the permits.

The Service believes that the impacts of take of murrelets outside of the MMCAs will be effectively mitigated through the preservation and enhancement of the best quality murrelet habitat in the Plan area over the life of the permit. Conservation of MMCAs along with the Headwaters Reserve and nearby Federal and state parks, should provide sufficient high quality habitat to contribute to well distributed and viable populations of marbled murrelets in Southern Humboldt County and Conservation Zone 4 in accordance with the conservation objectives of the final Recovery Plan for the Marbled Murrelet. The take minimization measures applicable to harvest in suitable murrelet habitat outside of the MMCAs will further reduce the impacts of such take. The Service notes that a proportionally higher volume of the most valuable timber on PALCO's land is contained within the boundaries of the MMCAs and therefore excluded from timber management under the conservation plan. Accommodating PALCO's operational needs by allowing the company to harvest lower quality residual habitat outside of the MMCAs is compatible with protection of the marbled murrelet. Based on the above, the Service finds that effects of the take on the marbled murrelet will be minimized and mitigated to the maximum extent practicable.

Northern Spotted Owl

In evaluating whether the impacts of take of NSO would be minimized and mitigated to the maximum extent practicable under the HCP, the robust population status of the species in Northern California must be carefully considered. As discussed in the Services' Biological/Conference Opinion and summarized above, northern spotted owls in California occur in higher densities and across a broader range of forest conditions than in other parts of the species' range. The owl population on PALCO's ownership alone far exceeds the conservation target of three clusters of 20 owl pairs within the Southern Humboldt County/Northern Mendocino County Area set forth in the draft *Final Recovery Plan for the Northern Spotted Owl.* Thus, although the NSO conservation plan allows the number of owl activity sites to be reduced by up to one third of the current number over the life of the permit, the effects of such take on NSO populations in Southern Humboldt County and on the species across its listed range would be small and would not impair the viability of NSO populations in the immediate action area or in the surrounding range. The minimization and mitigation measures incorporated into the NSO plan are commensurate with the impacts to the species likely to result from the covered activities. The Service concludes that these measures, which include a prohibition on harvest of all active nest sites, maintenance of at 108 owl activity centers on the property, at least 80 percent of which must be occupied by owl pairs, the required owl reproductive rate, and required buffering of owl nest sites to minimize disturbance impacts, effectively minimize and mitigate the effects of the proposed take to the maximum extent practicable.

Coho Salmon, Chinook Salmon, Steelhead and Coastal Cutthroat Trout

The four anadromous salmonid fish species proposed for coverage under the HCP, including the

listed coho salmon, will all benefit from the improving riparian and instream habitat conditions expected to result from the comprehensive habitat based conservation strategy contained in the aquatics conservation plan. The interactive components of the plan are designed to minimize the direct, indirect and cumulative effects of timber management activities on Class I, II and III waters across PALCO's ownership with the objective of maintaining or achieving, over time, properly functioning aquatic habitat conditions that are essential to the long term survival of anadromous salmonids. The NMFS recognizes that the level of take of covered fish species likely to result from PALCO's timber management activities is not susceptible to quantification. The Service considers the effects of take resulting from plan activities to be minimized and mitigated to the maximum extent practicable where, as here, the level of protection provided under the HCP will result, over time, in properly functioning aquatic habitat conditions necessary to the long term survival of the covered anadromous fish species across the plan area.

Monitoring is an integral component of the aquatics conservation plan and will be conducted to determine compliance, effectiveness, and trends for all covered activities. PALCO will be responsible for the cost of the monitoring program. Elements of the proposed monitoring program would be revised after each watershed analysis to respond to site specificity of prescriptions, assumptions and questions for each watershed. Compliance monitoring will contribute to the goal of achieving 100 percent compliance with prescription implementation and would consist of three components: third party monitoring, the THP checklist, and a Best Management Practices evaluation. These will allow NMFS, FWS and the State of California Department of Fish and Game to identify recurring successes and problems with prescription implementation and to remedies, if necessary. PALCO will use effectiveness monitoring as the basis for evaluating the results of prescription implementation on the features or processes that occur on the hillslope and in the instream environment. This will help PALCO and the Services to determine whether the prescriptions actually "work" and whether they are resulting in the protection of aquatic values. With input from the Services and the State of California Department of Fish and Game, PALCO will craft hillslope effectiveness monitoring, instream effectiveness monitoring, and trend monitoring strategies for each hydrologic unit. The details of this monitoring will be developed but will focus on the achievement of objectives, answering questions, or testing well-considered hypotheses, relating to factors necessary for the protection and restoration of aquatic resources. PALCO will also use the results of trend monitoring as part of its cumulative effects analysis in watershed analysis.

NMFS finds that the extensive monitoring programs in the Aquatics Conservation Plan satisfy the requirement of 50 CFR § 222.22(c)(2) that PALCO will monitor, to the maximum extent practicable, the impacts of take under the incidental take permit.

Western Snowy Plover, American Peregrine Falcon, Bald Eagle and Bank Swallow

The western snowy plover, American peregrine falcon and bald eagle extend over wide ranges and have either no or only a limited documented presence within the plan area. Thus the likelihood of take of these species resulting from implementation of the HCP is relatively low. The HCP conservation measures for these species are primarily aimed at identifying and

avoiding any disturbance to active nest sites that may occur within the plan area and, in the case of the bald eagle, foraging areas. Similarly, the conservation plan for the bank swallow, a state listed species which is not known to occur within the plan area, is designed to detect and protect from disturbance any bank swallow colonies that may be discovered in the future. Taking into account the low probability of take of the above species and their minimal occurrence, if any, on PALCO lands, the Service concludes that the take avoidance measures incorporated into the conservation plans for these species will effectively minimize and mitigate the impacts of take of these species resulting from the covered activities.

Pacific Fisher, California Red Tree Vole, Northern Red-Legged Frog, Foothill Yellow-Legged Frog, Tailed Frog, Southern Torrent Salamander and Northwestern Pond Turtle

The Pacific fisher, red tree vole and amphibian and reptile species identified above are known to occur within the plan area and take of those species is likely to result from PALCO's timber management activities. The conservation plan objectives for each of these species is to sustain viable populations of the species in each watershed assessment area where they occur within the plan area, or with respect to the Pacific fisher, to contribute to a sustainable population of Pacific fishers in the Coastal Province of Northern California. The impacts of take of these species resulting from timber management activities will be minimized and mitigated through several elements of the HCP's operating conservation program.

As summarized above under the "Project Description" and "Analysis of Effects" sections, the sivicultural prescriptions incorporated into the aquatics conservation plan associated with RMZs, mass wasting avoidance strategy, and cumulative effects and disturbance index restrictions, will protect important habitat areas for each of these species. The amphibian and reptile species' life history and habitat requirements, including those upslope of RMZs, will be further refined through the development of a specific amphibian and reptile module during watershed analysis and the results integrated into post watershed analysis prescriptions to minimize and mitigate timber management effects on those species. In addition the Habitat Diversity and Structural Components element of the OCP is expected to result in favorable habitat conditions for each of the species by requiring the retention and providing for the recruitment of important forest structural components, such as snags, live cull trees, downed logs and hardwood trees following timber harvest and other management activities across the PALCO landscape. Those measures also require that varying percentages of PALCO lands be distributed among habitat types important to these species throughout the permit term. The protection of substantial amounts of old growth, residual and second growth habitat in the MMCAs under the marbled murrelet conservation plan will also provide important habitat blocks for these species. The combination of various habitat protection measures contained in different conservation plan components of the HCP will minimize the impacts of take of these species and effectively mitigate such take to the maximum extent practicable by insuring sufficient habitat of suitable composition is retained and recruited to sustain viable populations of these species within the plan area over the permit term.

Conclusions

Based upon the foregoing analyses, the Services find that the HCP will minimize and mitigate to the maximum extent practicable the impacts of take of the listed and unlisted covered species.

The Services note that PALCO has recently raised economic concerns with respect to timber harvest levels under the provisions of the HCP. PALCO has claimed the need to harvest a minimum of 210 million board feet (mmbf) annually and suggests that the HCP could result in harvest levels substantially below that amount. The agencies do not believe that the information the company has provided warrants any substantive changes to the HCP.

First, the company's projected harvest levels under the HCP are speculative, because the aquatic prescriptions, which PALCO asserts are the source of the restrictions of concern, are subject to modification though adaptive management, including the watershed analysis process. This process must be completed for all watersheds in PALCO's ownership within five years, and the process for an individual watershed may be completed in six to nine months. Thus, the initial prescriptions for specific watersheds may be modified in a short period of time to allow a greater level of harvest than PALCO projects.

PALCO submitted to the agencies under a cover letter of February 17, 1999, a purported "Economic Analysis" consisting of a single page of textual explanation accompanying a simplified and skeletal Statement of Operations and Cash Flow Statement. These statements are stated to be for a future year following a transition period subsequent to the close of the Headwaters transaction. They indicate deficits under the company's Alternative 25 - the HCP as modified in a way PALCO believes may result from watershed analysis - of $21.6 million (Statement of Operations) and $20.4 million (Cash Flow Statement). The Operations and Cash Flow statements show smaller deficits under the company's Alternative 29a, which is based on the prescriptions in the draft HCP as modified to include many elements of AB 1986, but which does not reflect changes that may result from watershed analysis. Alternative 25 assumes a harvest level of 185 mmbf. Alternative 29a assumes a harvest level of 210 mmbf. The agencies are unable to verify the accuracy or reliability of, and therefore cannot accept as fact, the harvest levels PALCO has projected. Harvest levels may be greater than PALCO claims.

In addition to the uncertainty regarding harvest levels, the simplified statements submitted by PALCO do not provide a basis to evaluate the financial material the statements contain. The data has been presented very late in the process and without supporting documents. Moreover, the statements on their face show an annual interest expense of approximately $64 million. PALCO indicates that most of this interest expense is related to debt service on $800 million in bonds issued by Scotia Pacific in July, 1998. Assuming that this is so, it is possible that this expense could be substantially reduced if a portion of the proceeds of the Headwaters sale ($300 million in cash and over $50 million in timberlands) were applied to reduce the outstanding bonded indebtedness.

For all of these reasons, the information submitted by PALCO does not alter the Services' findings that the minimization and mitigation measures included in the HCP's Operating

Conservation Program are feasible and minimize and mitigate the impacts of the proposed taking to the maximum extent practicable.

C. PALCO will ensure adequate funding for the HCP is provided.

Under Section 3.3 of the IA, PALCO warrants that it has and will expend sufficient funds to fulfill all of its conservation and management obligations under the HCP and the IA. PALCO is required to submit a budget to the wildlife agencies by February 1 of each year demonstrating that sufficient funds to carry out PALCO's commitments under the permits have been authorized for expenditure. As a form of additional assurance of adequate funding, PALCO is required to post security with CDFG in the amount of $2 million, adjusted annually for inflation, which is based on the estimated annual out of pocket costs of carrying out certain of PALCO's obligations under the permits. The amount of the security must be increased by the amount of any liquidated damages PALCO was required to pay to the State of California during the prior year under the terms of a separate agreement entitled "Agreement Relative to Enforcement of AB 1986." If the security is drawn upon by the wildlife agencies as a result of PALCO's failure to carry out any of its obligations under the permits, PALCO would be required to replenish the security to the required amount within 10 days. Failure by PALCO to provide adequate funds to carry out the HCP would be grounds for suspension or revocation of the incidental take permits.

D. The IA and HCP include detailed procedures to address changed and unforeseen circumstances

In accordance with the Services' final "No Surprises" rule, the HCP includes a detailed discussion of reasonably foreseeable events that could occur during the permit term and adversely affect the covered species or the plan area. These "changed circumstances" include fire, wind, flood, earthquake, landslides and oil spills. Where there are appropriate measures that could reasonably be implemented within the plan area to address the impacts of such circumstances on the covered species, those measures are identified in the plan, and PALCO is required to implement them.

In response to changed circumstances resulting from natural catastrophes, including fire, flood and landslides, PALCO is required to conduct watershed analysis on an expedited basis within all affected watersheds, so that specific prescriptions which take into account the altered conditions resulting from such events are implemented promptly. Changed circumstances identified in the HCP also include the listing of a new species or the suspension, revocation or relinquishment of either the NMFS or FWS permit. Under both circumstances PALCO is required to modify its activities as necessary to avoid take, jeopardy or adverse modification of the designated critical habitat, if any, of a newly listed species or any listed species included in the suspended, revoked or relinquished permit.

In contrast to changed circumstances, unforeseen circumstances are by definition circumstances that affect a species or the geographic area covered by the HCP that could not reasonably have been anticipated by the Services and PALCO at the time the HCP was developed. Consistent

with the "No Surprises" rule, the Services may not require PALCO to commit additional land, water or financial compensation or additional restrictions on the use of land, water or other natural resources in response to an unforeseen circumstance without PALCO's consent. However because the HCP incorporates through watershed analysis, adaptive management and trend and effectiveness monitoring provisions, the ability to adjust over the life of the permit take minimization and mitigation measures under the OCP in response to habitat changes within the plan area or to the status of the covered species, the significance of the no surprises assurances as applied to this HCP is probably less than in other HCPs which do not provide for adaptive management. The parties also explicitly recognize in Section 10.16 of the IA that all activities covered under the permits must be in compliance with Section 7 and Section 10 of the ESA.

The Services find that the HCP and IA include procedures to address changed and unforeseen circumstances consistent with the "No Surprises" rule.

E. The taking of the covered species will not appreciably reduce the likelihood of their survival and recovery in the wild.

The legislative history of the ESA establishes Congress's intent that this issuance criterion be based on finding of "not likely to jeopardize" under section 7(a)(2) of the ESA. As a result, the proposal to issue the incidental take permits has also been reviewed by the Services under Section 7 of the Act. In the Biological/Conference Opinion the Services have determined that issuance of the incidental take permits to PALCO is not likely to jeopardize the continued existence of the 17 species covered by the HCP. Refer to pages 369 - 392, 348 - 406, and 407 - 415 for conclusions regarding individual covered species. The Services have also determined that the proposed action would not be likely to result in the destruction or adverse modification of critical habitat designated for the marbled murrelet or currently proposed for the coho salmon or chinook salmon. No other critical habitat would be affected by issuance of the proposed incidental take permits.

F. Other measures, as required by the Services, have been met.

The Services find that the HCP and IA incorporate all of the measures determined by the Services to be necessary for issuance of the proposed incidental take permits under section 10(a) of the ESA. As detailed in the HCP and IA, PALCO is required to carry out the implementation and effectiveness monitoring programs described in detail in Section 6 of the HCP and report the results of those programs to the Services in accordance with the specific schedules set forth in the individual conservation plans. PALCO is also required to submit an annual report to the Services by February 1 of each year which describes the covered activities undertaken during the prior year, the results of the HCP's Operating Conservation Program and proposed OCP activities planned for the coming year. The report must also include the results of any surveying and data collection for those covered species with multi-year reporting protocols.

Several provisions have also been added to the HCP and IA to strengthen both compliance and

effectiveness monitoring by the wildlife agencies. Chief among these provisions is Section 3.4.1 of the IA which requires PALCO to fund for the life of the permit an independent on-site monitoring entity ("HCP Monitor") approved by the wildlife agencies and under contract to CDFG to inspect whether the Covered Activities are being carried out in accordance with the provisions of the HCP, and at the agencies election, to monitor the effectiveness of the HCP's Operating Conservation Program. The HCP monitor is to be given full access to PALCO's land to inspect the Covered Activities and must be present during each timber harvest conducted by PALCO or on the company's behalf by third party contractors. The HCP Monitor is to immediately report any deviations by PALCO from the requirements of the HCP to designated representatives of the Wildlife Agencies and CDF so that appropriate enforcement action may be taken. The Services will also monitor PALCO's compliance with the HCP in accordance with their regulatory responsibilities under the ESA.

Section 3.2 of the IA has been modified to clarify PALCO's responsibility and liability under the ITPs for the actions of all of its employees and contractors conducting Covered Activities. The Company is required to conduct an HCP education program for all of its employees and contractors to insure they are properly advised of the HCP's requirements. In addition, each contract between PALCO and a third party contractor must include a provisions requiring the contractor to comply with the Federal and state ITPs.

Section 3.3 of the IA requires PALCO to provide an annual budget approved by its board of directors which demonstrates sufficient funds to carry out PALCO's commitments for the next fiscal year. This provision has been modified to require that PALCO post security in the amount of $ 2 million with CDFG which approximates the amount necessary to carry out the company's obligations for one year. The security must be adjusted annually for inflation and immediately replenished by PALCO should the wildlife agencies draw on it as a result of PALCO's failure to fully carry out any of its HCP obligations. The obligation to post security adequate to carry out PALCO's out of pocket costs for each year will insure that mitigation keeps pace with the company's timber harvest and other covered activities.

Substantial sanctions are provided under the ESA for violations of a Federal ITP. Under Section 11 of the Act, PALCO may be assessed civil penalties of up to $25,000 and criminal penalties of up to $50,000 for each knowing violation of the Federal ITP. A criminal conviction would also expose the violator to imprisonment for up to a year. Pursuant to 18 U.S.C. § 3571(b)(5) and (c)(5), respectively, the criminal penalties may be doubled to $100,000 for each violation by an individual and $200,000 for each violation by the company. Significantly, § 3571(d) allows, as an alternative to the above identified monetary fines, the imposition of a fine equal to twice the gross pecuniary gain to the person guilty of the offence. As an example, PALCO could be subjected to fines equal to twice the gross value of each old growth tree harvested in violation of the ITPs' terms and conditions. Section 9.1(a)(3) of the IA, which addresses remedies in the event of a permit violation, has been modified to provide that each harvesting of a single merchantable viable tree in violation of the terms and conditions of the ITPs will constitute a separate violation of the permit for purposes of imposing penalties under Federal and state law.

These provisions will provide the Federal wildlife agencies with powerful enforcement tools to insure PALCO's compliance with the ITPs and constitute a powerful disincentive to the company to violate the permit.

G. The Service has received the necessary assurances that the plan will be implemented.

The signing of the IA by PALCO and the Services assures that the proposed HCP will be implemented. The proposed incidental take permits would be conditioned on PALCO's compliance with the HCP and IA. The significant effort in time and money contributed by PALCO to the development of the HCP and the ongoing funding provisions also demonstrate PALCO's commitment to implement the HCP.

III. GENERAL CRITERIA AND DISQUALIFYING FACTORS

Permit issuance criteria included under both FWS and NMFS regulations provide that the Services may refuse to issue a permit if they find that the permit applicant evidences a lack of responsibility to hold the permit. See 50 C.F.R. § 13.2l(b)(1) and 50 C.F.R. § 220.21(b)(3). The assessment of a civil penalty or conviction of a criminal provision of a statute or regulation related to the activity for which the permit is sought provides a basis for finding a lack of responsibility on the part of the permit applicant under FWS regulations at 50 C.F.R. § 13.21(b)(1). PALCO's past record of California Forest Practice Rule (FPR) violations and the recent revocation of the company's timber operator's license by CDF are cause for serious concern and have been carefully considered by the Services in evaluating whether PALCO possesses the requisite responsibility to hold the incidental take permits and to comply fully with their terms. However, PALCO's history of violations does not automatically disqualify the company from holding an ITP. 50 C.F.R. § 13.21(c) identifies those factors that require FWS disapproval of a permit application. The factors include a felony violation under the Lacy Act or Migratory Bird Treaty Act and past revocation of an ITP. Mandatory disqualifying factors are not included in the companion NMFS regulations at 50 C.F.R. § 220.21. The determination whether PALCO's past conduct should disqualify the company from receiving ITPs is left to the reasoned discretion of FWS and NMFS. The Services have carefully considered the circumstances of PALCO's past violations and find that while such conduct does not disqualify PALCO from holding the incidental take permits, it does warrant a significantly higher level of permit compliance oversight and monitoring by the Services than would otherwise be required. Several provisions have been added to the HCP and IA to strengthen the Services' ability to monitor and enforce PALCO's compliance with the ITPs. These measures are described above under Section II.F.

IV. RECOMMENDATION ON PERMIT ISSUANCE

Based on the foregoing findings, we recommend the issuance of permits to PALCO authorizing the incidental take of the northern spotted owl, marbled murrelet, bald eagle, peregrine falcon, western snowy plover and coho salmon and 11 additional unlisted covered species should they be listed within the life of the permit.

Fish and Wildlife Service:

Approve: Bruce L. Halstead — 2/24/99
Arcata FWO Supervisor — Date

Concur: _____ — _____
Manager, California/Nevada Operations Office — Date

National Marine Fisheries Service:

Approve: William J. Hogarth — 2/24/99
Regional Administrator, Southwest Region — Date

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Regional Administrator, Southwest Region — Date

REFERENCES CITED

Pacific Lumber Company, Scotia Pacific Holding Company, Salmon Creek Corporation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, California Department of Fish and Game, California Department of Forestry and Fire Protection. 1999. Implementation Agreement for the proposed issuance of an incidental take permit to the Pacific Lumber Company for the Headwaters Forest Project in Humboldt County, California, dated February 25, 1999.

U.S. Fish and Wildlife Service, California Department of Forestry and Fire Protection. 1998. Draft Environmental Impact Statement/Environmental Impact Report for the Headwaters Forest Acquisition and the Palco Sustained Yield Plan and Habitat Conservation Plan. October 1998.

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U.S. Fish and Wildlife Service, National Marine Fisheries Service. 1999. Joint Biological/Conference Opinion on proposed issuance of an incidental take permit (TE828950-0) to the Pacific Lumber Company for the Headwaters Forest Project in Humboldt County, California, dated February 24, 1999. File number FWS 1-14-99-18.

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U.S. Department of the Interior. 1992. Final Draft Recovery Plan for the Northern Spotted Owl.